UPDATE: Contribution of Meat to the Diet

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Introduction

Calculations based on the simple disappearance of food items from our daily food supply have led to substantial overestimates of our per capita consumption of both food energy and essential nutrient elements in the U.S. diet.

The present paper is written with the understanding that a more accurate estimate of the nutritional status of Americans necessarily depends upon the availability of more detailed data on the amounts of food actually consumed. Since red meats, both nutritionally and economically, are of the utmost importance in the U.S. food-availability arena, it is hoped that the data presented herein will be of use in a broad range of applications.

It should be recognized at the outset that deriving meat consumption and composition figures in some cases necessitates reliance upon assumptions and estimates. Published, objective information has been used to the extent that it was available, and estimates have been used only when unavoidable. In such areas as the contribution of red meats to fats in the U.S. diet, necessary estimates were applied in such a way that the fat contribution is believed to be nominally overstated. Finally, because data on plate waste and on spoilage both in the home and within distribution channels presently is impossible to estimate reliably, it should be understood that lean meat consumption also has been slightly overestimated.

Considerable confusion exists with regard to the amount of red meat actually consumed (eaten) in the United States. For purposes of following trends or general changes in consumption patterns, carcass weight disappearance is often expressed on an annual per capita basis. However, the boneless lean mass (with a small amount of adhering fat tissue) is the truly consumable meat. The carcass contains bones and fat which are not consumed as part of red meat, and cooking further reduces the amount actually available to be eaten.

Using beef as the example and converting it as normally occurs between the processing plant and the human stomach reveals the extent of consumption overstatement that exists per capita for beef. Carcass weight disappearance in 1982 was about 126 g (4.46 oz). Bones represented about 18.7 g (.66 oz), rendered fats about 14.5 g (.51 oz) and retail trim, cooking losses and plate waste about 23.5 g (.83 oz). That which finally became a part of the consumed food was about 58.7 g (2.07 oz) fresh plus about 11.1 g (.39 oz) as processed meats. The same weight reduction scenario exists for all red meat species, although the magnitudes allocatable to the various categories differ.

Theoretically, consumption is accurately represented in all of these quantities. That is, we do consume the end product of: live hundredweight of meat animals; hanging carcasses; retail meat department inventories; and actual servings of cooked meat. Unlike other types of consumable goods, however, food should be measured in the actual amount finally eaten. There is only one way to measure consumption of shoes or houses. There are many ways to measure meat consumption, but only one is truly useful in a dietary context.

Thus, while per capita carcass weight disappearance is very useful for a number of purposes, it does not provide useful dietary information. Also, it is well recognized that different consumers consume food at different levels. Recent surveys by Yankelovich, Skelly and White, Inc. (1983), permit segmenting the population into different consumption levels for all categories except veal and lamb, as shown in Table 1.

The varying levels of meat consumption are frequently debated on the grounds that the number of non-consumers in most cases remains unknown. Using the population segmentation and use level estimates of Yankelovich (1983) permits one to speculate with a higher degree of accuracy than has been previously possible. It seems unlikely that heavy consumers of any given class of meat product would also be heavy users of every one of the others. However, if one made that assumption, it would seem to come near reflecting the maximum per capita red meat consumption. Such a definition of a heavy red meat user's dietary intake from red meat compared with the traditional expression of per capita consumption across the population (the more common method of expressing per capita consumption) is shown in Table 2.

In estimating the dietary contribution of fresh red meats, the assumption has been made that one half of the trimmable fat tissue remaining on the cuts as purchased is actually eaten. If one were to exclude that fat tissue, the primary changes in dietary contribution would be in lipids and, of course, calories.

The allegations critical of red meat in the diet center largely on its contribution to dietary total fat and to saturated fat, cholesterol and sodium.

On the basis of total population, the calories from fat in red meat represent less than 8% of the adult male's calorie intake. Only about 92 kcal, or about 3.4% of the adult male's intake, are supplied by saturated fat.

For those who need to control dietary cholesterol (and

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Table 1. Daily Per Capita Red Meat Consumption (g) Segmented by Use Level

Consumer Segments	Fresh Beef Ground Beef	Fresh Beef Other Beef	Fresh Pork	Veal	Lamb	Processed Meat	Total
Occasional Users	2.06	4.67	1.73				8.46
Moderate/Light Users	12.37	27.95	10.33			27.55	78.20
Heavy Users	34.46	84.65	31.48			95.14	245.68
Total Users	19.19	41.57	11.49			46.86	119.11
Total Population	18.42	40.32	9.77	1.12	.95	42.65	113.23

Table 2. Use Level Comparison of Red Meat Contribution to the Diet

	Heavy Users Units	Heavy Users % Of RDA*	Total Population Units	Total Population % Of RDA*
Total Meat - oz	8.74		3.99	
g	247.8		113.1	
Protein - g	55.7	99.5	25.5	45.5
Lipids - g	52.3		23.7	
Kcal	718		327	
Cholesterol - mg	191		87	
Iron - mg	5.255	52.6	2.476	24.8
Zinc - mg	10.129	67.5	4.771	26.5
Sodium - mg	1215		546	
Thiamin - mg	.718	51.3	.298	21.3
Riboflavin - mg	.577	36.1	.258	16.1
Niacin - mg	9.529	52.9	4.277	23.8
Vitamin B-12 - mcg	4.488	149.6	2.130	71.0

*23-50 year old male

whether or not the general population would benefit from such action remains among the most controversial issues in the diet/health scientific community), present consumption levels supply less than 30% of the American Heart Association's (1982) recommended maximum of 300 mg per capita per day.

For those who are concerned about dietary sodium, fresh red meats contain on the order of 60 to 80 mg per 85 g serving. In processed meats, which contain a higher level of sodium, sodium-containing compounds perform a number of essential functions for which viable alternatives do not now exist. Those functions include preservation, emulsion stabilization, myosin extraction to permit adhesion between pieces of meat, flavor enhancement, etc. About 91.5% of the 546 mg of dietary sodium contributed by red meats is attributable to the processed meat component. For the approximately 80% of the population who need not be overly concerned about dietary sodium, that amounts to about 16.5% of the 3300 mg considered by the Food and Nutrition Board (1980) to be the upper limit of a safe and adequate daily intake of sodium.

With regard to the positive contribution of red meat to the diet, it is widely recognized and generally accepted that red meat provides significant amounts of B vitamins, minerals and nutritionally complete protein. Beef is recognized as a particularly rich source of iron, zinc and vitamin B-12, while pork excels in thiamin content and is a very good source of zinc. All red meats are noted for their high nutrient density, which means that they supply a number of essential nutrients at much higher portions of a human's requirements than their contribution to calorie needs.

A more extensive treatment of these subjects may be found in Breidenstein, B.C., Contribution of Red Meat to the U.S. Diet, Chicago, National Live Stock and Meat Board, 1984. Data provided in the present paper should be assumed to have that publication as their source, unless otherwise noted.

Fresh Beef

Combining federally inspected slaughter broken down by class and weight (AMI 1983a), all beef imports (AMI 1983c), and non-f.i. domestic slaughter assumed to be dispersed among class and weight cattle exactly as the f.i.s., the total estimated beef tissue available for use in this country in 1982 is as shown in Table 3.

Assuming that none of the bones and essentially none of the body cavity fats become components of consumable red meat entities, the use distribution of all soft beef tissues may be accurately estimated, as shown in Table 4. The American Meat Institute (1983b) estimates that per capita hamburger

consumption is 18.8 pounds per year. The U.S. Department of Commerce (1983) estimates the total U.S. civilian population to be 229.865 million.

Applying the population segmentation figures generated by Yankelovich, Skelly and White, Inc. (1983), consumption profiles for ground beef and for fresh beef other than ground beef can be projected as in Tables 5 and 6, respectively.

The estimated contribution of dietary fat of beef as consumed in this country in 1982 is shown in Table 7.

Dietary contributions of ground beef and fresh beef other than ground beef are shown in Tables 8 and 9, respectively. Tables 10 and 11 show the percent of the adult male Recommended Dietary Allowances (NAS 1980) of a number of essential nutrients provided by ground beef and by fresh beef other than ground beef, respectively.

Table 3. Total Estimated Beef Tissue Available for Use in U.S. - 1982

	(000) Pounds
Edible Lean Tissue	13,380,804
Body Cavity Fat Tissue	646,944
Other Fat Tissue	5,902,428
Bone	3,467,823

Table 4. Use Distribution of Soft Beef Tissues

	Billions of Pounds		
	Lean	*Fat*	*Total*
Consumed as "Cuts"	8.801	2.010	10.811
Ground Beef	3.198	1.123	4.321
Processed Meat	1.382	.681	2.063
Rendered	—	2.088	2.088
Total	13.381	5.902	19.283

Table 5. Consumption Profile for Ground Beef

	Population Represented		*Est. Daily Per Capita Consumption (Cooked)*	
Consumer Category	%	*No. of People (000)*	*g.*	*oz.*
Occasional User	7.0	16,091	2.06	.073
Moderate/Light User	56.1	128,954	12.37	.436
Heavy User	32.9	75,625	34.46	1.216
Total Users	96.0	220,670	19.19	.677
Non Users	4.0	9,195		
Total Population	100.0	229,865	18.42	.650

Table 6. Consumption Profile for Fresh Beef Other than Ground Beef

	Population Represented		*Est. Daily Per Capita Consumption (Cooked)*	
Consumer Category	%	*No. of People (000)*	*g.*	*oz.*
Occasional Users	15.0	34,480	4.67	.165
Moderate/Light Users	52.5	120,679	27.95	.986
Heavy Users	29.5	67,810	84.56	2.983
Total Users	97.0	222,969	41.57	1.466
Non Users	3.0	6,896	—	—
Total Population	100.0	229,865	40.32	1.423

Table 7. Estimated Contribution of Fresh Beef to Dietary Fat at Various Levels of Removal of Trimmable Fat From Cuts (Billions of Pounds)

	% Trimmable Fat Removed				
	0	*25*	*50*	*75*	*100*
Ground Beef	.8403	.8403	.8403	.8403	.8403
Separable Lean	.6798	.6798	.6798	.6798	.6798
Separable Fat	1.0017	.7513	.5009	.2504	—
Total bil. lbs.	2.5218	2.2714	2.021	1.7705	1.5201

Table 8. Daily Per Capita Contribution of Ground Beef To the U.S. Diet, 1982

Consumer Categories	Protein *g*	Lipids *g*	Kcal	Cholesterol *mg*	Iron *mg*	Zinc *mg*	Sodium *mg*	Thiamin *mg*	Riboflavin *mg*	Niacin *mg*	Vitamin B_{12} *mcg*
Occasional Users	.52	.51	6.8	1.8	.054	.117	1.3	.002	.004	.071	.049
Moderate/Light Users	3.1	3.05	40.7	10.7	.325	.702	7.4	.010	.025	.425	.292
Heavy Users	8.64	8.49	113.5	29.7	.905	1.955	20.5	.029	.071	1.183	.812
Total Users	4.81	4.73	63.2	16.5	.504	1.089	11.4	.016	.040	.659	.452
Total Population	4.62	4.54	60.7	15.9	.484	1.045	11.0	.015	.038	.633	.434

Table 9. Daily Per Capita Contribution of Fresh Beef Other than Ground Beef to the U.S. Diet, 1982

Consumer Categories	Protein *g*	Lipids *g*	Kcal	Cholesterol *mg*	Iron *mg*	Zinc *mg*	Sodium *mg*	Thiamin *mg*	Riboflavin *mg*	Niacin *mg*	Vitamin B_{12} *mcg*
Occasional Users	1.28	.81	12.8	4.0	.131	.281	3.0	.004	.010	.171	.117
Moderate/Light Users	7.64	4.85	76.4	24.1	.782	1.687	17.7	.025	.062	1.022	.701
Heavy Users	23.10	14.68	231.1	72.9	2.364	5.103	53.6	.076	.186	3.091	2.120
Total Users	11.36	7.22	113.6	35.8	1.162	2.508	26.4	.037	.091	1.519	1.042
Total Population	11.01	6.82	108.5	34.8	1.129	2.433	25.6	.036	.089	1.474	1.011

Table 10. Percent of RDA for Male Aged 23-50 Years Provided Per Capita by Ground Beef in the U.S. Diet, 1982*

Consumer Categories	Protein	Lipids	Kcal	Cholesterol	Iron	Zinc	Sodium	Thiamin	Riboflavin	Niacin	Vitamin B_{12}
Occasional Users	.93%	—	.25%	.6 %	.54%	.78%	.04%	.14%	.25%	.39%	1.63%
Moderate/Light Users	5.54	—	1.51	3.57	3.25	4.68	.22	.71	1.56	2.36	9.73
Heavy Users	15.43	—	4.2	9.9	9.05	13.03	.62	2.07	4.44	6.57	27.07
Total Users	8.59	—	2.34	5.5	5.04	7.26	.35	1.14	2.5	3.66	15.07
Total Population	8.25	—	2.25	5.3	4.84	6.97	.33	1.07	2.38	3.52	14.47

Table 11. Percent of RDA for Male Aged 23-50 Years Provided Per Capita by Fresh Beef Other than Ground Beef in the U.S. Diet, 1982*

Consumer Categories	Protein	Lipids	Kcal	Cholesterol	Iron	Zinc	Sodium	Thiamin	Riboflavin	Niacin	Vitamin B_{12}
Occasional Users	2.29%	—	.47%	1.33%	1.31%	1.87%	.09%	.29%	.63%	.95%	3.9 %
Moderate/Light Users	13.64	—	2.83	8.03	7.82	11.25	.54	1.79	3.88	5.68	23.37
Heavy Users	41.25	—	8.56	24.3	23.64	34.02	1.62	5.43	11.63	17.17	70.67
Total Users	20.29	—	4.21	11.93	11.62	16.72	.8	2.64	5.69	8.44	34.73
Total Population	19.66	—	4.02	11.6	11.29	16.22	.78	2.57	5.56	8.19	33.7

*Cholesterol percentage based on American Heart Association recommendation of 300 mg. dietary cholesterol per day. Calorie percentage based on 2,700 kcal mean energy needs of 154-lb. U.S. adult male, with customary energy output range of 2,300-3,100 Kcal/day. Sodium percentage based on upper limit of 1,100-3,300 mg/day estimated safe and adequate daily dietary intake by the Food and Nutrition Board (FNB/NRC 1980).

Fresh Pork

Estimated market direction and quantification estimates (USDA 1983) allow a similar procedure in the case of fresh pork. Again assuming that all lean tissue is actually eaten and that one-half the fat tissue on retail cuts is discarded, the present consumption estimates probably modestly overestimate the dietary fat contribution of fresh pork. The dietary profile of 100 g of fresh pork, as eaten, is presented in Table 12, using USDA data (1983) to estimate cooking losses of each of the primal cuts of pork.

Consumer categories established by the Yankelovich, Skelly and White, Inc. (1983), survey are applied in Table 13 to permit an estimate of fresh pork consumption. Estimates of the daily per capita dietary contributions and percentages of adult male RDAs contributed by fresh pork are shown in Tables 14 and 15, respectively.

Table 12. Dietary Contribution Per 100 g Cooked Edible Pork

	Leg	*Loin*	*Blade Boston*	*Arm Picnic*	*Neck Bones & Spare Ribs*	*Composite as Assumed to be Eaten*
Protein - g	26.56	25.05	29.16	24.27	29.06	26.09
Lipids - g	16.21	19.46	22.24	21.05	30.30	21.30
Kcal	259	282	327	294	397	303
Cholesterol - mg	94	90	114	95	121	97
Iron - mg	1.06	1.11	1.91	1.29	1.85	1.23
Zinc - mg	3.04	2.82	5.17	3.65	4.60	3.33
Sodium - mg	58.8	65.7	71.6	74.6	93	70.4
Thiamin - mg	.660	.757	.535	.550	.408	.675
Riboflavin - mg	.330	.337	.365	.328	.382	.346
Niacin - mg	4.74	5.66	4.19	4.12	5.48	5.44
Vitamin B-12 - mcg	.710	.900	.880	.764	1.08	.917

Table 13. Consumption Profile for Fresh Pork

Consumer Category	*Population Represented*		*Est. Daily Per Capita Consumption*	
	%	*No. of People (000)*	*g.*	*oz.*
Occasional Users	27.0	62064	1.73	.061
Moderate/Light Users	42.3	97324	10.33	.364
Heavy Users	15.7	35997	31.48	1.110
Total Users	85.0	195385	11.49	.405
Non-users	15.0	34480		
Total Population	100.0	229865	9.77	.345

Table 14. Daily Per Capita Contribution of Fresh Pork To the U.S. Diet, 1982

Consumer Categories	Protein *g*	Lipids *g*	Kcal	Cholesterol *mg*	Iron *mg*	Zinc *mg*	Sodium *mg*	Thiamin *mg*	Riboflavin *mg*	Niacin *mg*	Vitamin B_{12} *mcg*
Occasional Users	.45	.37	5.2	1.7	.021	.058	1.2	.012	.006	.094	.016
Moderate Light Users	2.70	2.20	31.3	10.0	.127	.344	7.3	.070	.036	.562	.095
Heavy Users	8.21	6.7	95.4	30.5	.387	1.048	22.2	.212	.109	1.713	.289
Total Users	3.00	2.4	34.8	11.1	.141	.383	8.1	.078	.040	.625	.105
Total Population	2.55	2.08	29.6	9.5	.120	.325	6.9	.066	.034	.531	.090

Table 15. Percent of RDA for Male Aged 23-50 Years Provided Per Capita by Fresh Pork in the U.S. Diet, 1982*

Consumer Categories	Protein	Lipids	Kcal	Cholesterol	Iron	Zinc	Sodium	Thiamin	Riboflavin	Niacin	Vitamin B_{12}
Occasional Users	.80%	—	.19%	.57%	.21%	.39%	.04%	.86%	.38%	.52%	.53%
Moderate/Light Users	4.82	—	1.16	3.33	1.27	2.29	.22	5.0	2.25	3.12	3.17
Heavy Users	14.66	—	3.53	10.17	3.87	6.99	.67	15.14	6.81	9.52	9.63
Total Users	5.36	—	1.29	3.7	1.41	2.55	.25	5.57	2.50	3.47	3.50
Total Population	4.55	—	1.10	3.17	1.2	2.17	.21	4.71	2.13	2.95	3.0

*Cholesterol percentage based on American Heart Association recommendation of 300 mg. dietary cholesterol per day. Calorie percentage based on 2,700 Kcal mean energy needs of 154-lb. U.S. adult male, with customary energy output range of 2,300-3,100 Kcal/day. Sodium percentage based on high end of 1,100-3,300 mg. range estimated safe and adequate daily intake for adults (FNB/NRC 1980).

Fresh Veal and Lamb

Consumption use level categories for veal and lamb are not available as they are for the other meats. Per capita consumption, therefore, is expressed only on the basis of the total population. Veal carcass weight available for use in 1982 was about 1.91% that of beef, and lamb was about 1.62% that of beef (AMI 1983b). Applying those percentages to estimated cooked beef consumption results in a cooked veal estimate of 1.12 g and a cooked lamb estimate of .95 g per person, per day.

The estimated contribution of veal to the diet is based on the assumption that veal as consumed has the same composition as beef. It is recognized that such an assumption probably overstates the contribution of fat, thereby probably understating the contribution of all other components, except iron, which is presumed to be overstated. However, because of the low consumption of veal, such errors should be of little nutritional significance.

The estimated contribution of lamb to the diet is based on the premise that its consumed lean/fat tissue proportions are the same as beef's. Cooked fat tissue is estimated to contain 75% lipids, 6.5% protein and one-third the concentration of other nutrients as found in lean tissue. The lean tissue nutrient profile (USDA 1983a) was the base for lamb dietary contribution calculations.

Dietary contributions and percentages of the adult male RDA provided by veal and lamb are shown in Tables 16 and 17, respectively.

Table 16. Daily Per Capita Contribution of Fresh Veal and Lamb to the U.S. Diet, 1982

Species of Origin	Protein *g*	Lipids *g*	Kcal	Cholesterol *mg*	Iron *mg*	Zinc *mg*	Sodium *mg*	Thiamin *mg*	Riboflavin *mg*	Niacin *mg*	Vitamin B_{12} *mcg*
Veal	.298	.217	3.23	1.0	.0308	.0663	.70	.0009	.0024	.0402	.0276
Lamb	.233	.201	2.81	.9	.0168	.0443	.64	.0008	.0023	.0525	.0218

Table 17. Percent of RDA for Male Aged 23-50 Years Provided Per Capita by Fresh Veal and Lamb in the U.S. Diet, 1982*

Species of Origin	Protein	Lipids	Kcal	Cholesterol	Iron	Zinc	Sodium	Thiamin	Riboflavin	Niacin	Vitamin B_{12}
Veal	.53%	—	.12%	.33%	.31%	.44%	.02%	.06%	.15%	.22%	.92%
Lamb	.42	—	.10	.30	.17	.30	.02	.06	.14	.29	.73

*Cholesterol percentage based on American Heart Association recommendation of 300 mg. dietary cholesterol per day. Calorie percentage based on 2,700 Kcal mean energy needs of 154-lb. U.S. adult male, with customary energy output range of 2,300-3,100 Kcal/day. Sodium percentage based on high end of 1,100-3,300 mg. range estimated safe and adequate daily intake for adults (FNB/NRC 1980).

Processed Meats

The National Live Stock and Meat Board (1982) has estimated that, in terms of carcass weight, about 65% of pork, about 12% of beef and about 15% of lamb and mutton in the United States is converted to a processed form before being offered for sale to the consumer. Total processed meat actually eaten in the U.S. in 1982 is estimated by the author to be 7.889 billion pounds. Applying a number of necessary key assumptions to this aggregate figure (Breidenstein, 1984), the composited nutrient composition profile of this processed meat total is shown in Table 18. In cases where nutrient composition sources had no information for a dietary component, the average of the other products in that particular product group was used to represent the total.

Three categories of households using processed meat products emerged from the Yankelovich, Skelly and White, Inc., survey (1983). Estimated consumption profiles based on these categories are shown in Table 19.

Daily per capita dietary contributions of processed meats and percentages of the adult male RDA for a number of essential nutrients are shown in Tables 20 and 21, respectively.

Table 18. Dietary Components per 100 g Processed Meats

Protein	Lipids	Kcal	Cholesterol	Iron	Zinc	Sodium	Thiamin	Riboflavin	Niacin	Vitamin B_{12}
g	*g*		*mg*	*mg*	*mg*	*mg*	*mg*	*mg*	*mg*	*mcg*
16.00	23.11	286	59	1.63	2.01	1174	.419	.216	3.625	1.28

Table 19. Estimated Consumption Profile For Processed Meats

Consumer Category	Population Represented		Est. Daily Per Capita Consumption	
	%	No. of People (000)	g.	oz.
Light User	29	66,661	13.23	.467
Moderate User	36	82,751	39.09	1.379
Heavy User	26	59,765	95.14	3.356
Total Users	91	209,177	46.86	1.653
Non Users	9	20,868		
Total Population	100	229,865	42.65	1.504

Table 20. Daily Per Capita Contribution of Processed Meats to the U.S. Diet, 1982

Consumer Categories	Protein g	Lipids g	Kcal	Cholesterol mg	Iron mg	Zinc mg	Sodium mg	Thiamin mg	Riboflavin mg	Niacin mg	Vitamin B_{12} mcg
Light Users	2.12	3.06	37.8	7.8	.216	.266	155.3	.055	.029	.480	.169
Moderate Users	6.25	4.03	111.8	23.1	.637	.786	458.9	.164	.084	1.417	.500
Heavy Users	15.22	21.99	272.1	56.1	1.551	1.912	1116.9	.399	.206	3.449	1.218
Total Users	7.50	10.83	134.0	27.6	.164	.942	550.1	.196	.101	1.699	.600
Total Population	6.82	9.86	122.0	25.2	.695	.857	500.7	.179	.092	1.546	.546

Table 21. Percent of RDA for Male Aged 23-50 Years Provided Per Capita by Processed Meats in the U.S. Diet, 1982*

Consumer Categories	Protein	Lipids	Kcal	Cholesterol	Iron	Zinc	Sodium	Thiamin	Riboflavin	Niacin	Vitamin B_{12}
Light Users	3.79%	—	1.4%	2.6%	2.16%	1.77%	4.71%	3.93%	1.81%	2.67%	5.63%
Moderate Users	11.16	—	8.56	7.7	6.37	5.24	13.91	11.71	5.25	7.87	16.67
Heavy Users	27.18	—	10.08	18.7	15.51	12.75	33.85	28.5	12.88	19.16	40.6
Total Users	13.39	—	4.96	9.2	7.64	6.28	16.67	14.0	6.31	9.44	20.0
Total Population	12.18	—	4.52	8.4	6.95	5.71	15.17	12.79	5.75	8.59	18.2

*Cholesterol percentage based on American Heart Association recommendation of 300 mg. dietary cholesterol per day. Calorie percentage based on 2,700 kcal mean energy needs of 154-lb. U.S. adult male, with customary energy output range of 2,300-3,100 kcal/day. Sodium percentage based on upper limit of 1,100-3,300 mg/day estimated safe and adequate daily dietary intake by the Food and Nutrition Board (1980). (FNB/NCR 1980).

Conclusions

In using the consumption scenario presented herein, one must be cognizant of its limitations in terms of reliance on necessary assumptions and estimates, as well as of dealing with averages. The limitations of averages applies both to food supply composition and to human consumption levels. Recognizing these limitations, it is believed that this presentation much more clearly reflects the amounts of red meat actually consumed than is the case for carcass weight or other disappearance data.

The estimated consumption of each species fresh and of processed meat is summarized in Table 22. As pointed out earlier, it seems unlikely that heavy consumers of any meat product would also be heavy consumers of each of all the others. However, if one made that assumption, it would seem to come near reflecting the maximum red meat contribution to the diet, as shown in Table 23.

For this category of "heavy user," the importance of red meat's high nutrient density is readily apparent. Such a user would derive about 26.5% of the average adult male's calorie intake from meat, with about 11.5% of his calories originating from saturated fat. It seems probable, however, that many such "heavy users" have higher-than-average energy needs and, therefore, higher energy expenditures. That same red meat consumption would supply a much higher proportion of other essential nutrients, as shown in Table 23.

A more common way of viewing food consumption is to divide the entire consumable amount which was produced and which disappeared into consumption channels by the total population (also shown in Table 23). Nutrient density again is of obvious importance, in that such a level of use would provide about 12.1% of the calorie intake of that adult male, with about 3.4% of his calorie intake originating from saturated fat. The cholesterol provided by that red meat intake represents less than 30% of the American Heart Association (1982) recommended limit of 300 mg per person per day.

Good nutrition is a matter of satisfying each individual's dietary needs by appropriate selections from a variety of foods. In order to accomplish such satisfaction of human needs, it is essential that one have correct information regarding the nutritional profile of each food. The intent of this document is to clarify that nutritional profile for the red meat components of the diet as they are believed to be consumed.

Table 22. Meat Consumption Summary In the U.S. Diet, 1982

	Heavy User		*Total Population*	
	g	*oz*	*g*	*oz*
Fresh Beef Excluding Ground Beef	84.56	2.983	40.32	1.422
Ground Beef	34.46	1.216	18.42	.650
Fresh Pork	31.48	1.110	9.77	.345
Fresh Veal	1.12	.040	1.12	.040
Fresh Lamb	.95	.034	.95	.034
Processed Meat	95.14	3.356	42.65	1.504
Total	247.71	8.739	113.23	3.993

Table 23. Summary—Dietary Contribution of Red Meat-1982

	Heavy User		*Total Population*	
	Units	*% of RDA**	*Units*	*% of RDA*
TOTAL MEAT — oz	8.74	—	3.99	—
Protein - g	55.7	99.5	25.5	45.5
Lipids - g	52.3	—	23.7	—
Kcal	718	—	327	—
Cholesterol - mg	191	—	87	—
Iron - mg	5.255	52.6	2.476	24.8
Zinc - mg	10.129	67.5	4.771	31.8
Sodium - mg	1215	—	546	—
Thiamin - mg	.718	51.3	.298	21.3
Riboflavin - mg	.577	36.1	.258	16.1
Niacin - mg	9.529	52.9	4.277	23.8
Vitamin B-12 - mcg	4.488	149.6	2.130	71.0

*23-50 Year old male

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